

Warnings

Connect the power supply and the display/output device according to the safety regulations for electrical equipment.

> Risk of injury, damage to or destruction of the controller and/or the sensor

Avoid shocks and impacts to the sensor and controller.

> Damage to or destruction of the controller and/or the sensor

The supply voltage must not exceed the specified limits.

> Damage to or destruction of the controller and/or the sensor

Protect the sensor cable against damage.

> Destruction of the sensor, failure of the measuring device

Wiring or plugging only when power supply is switched off.

> Damage to or destruction of the controller

Notes on Product Marking

The product meets the requirements of CE and UKCA. All specifications and safety instructions described in the operating instructions must be observed.

Proper Environment

- Temperature range:
 - Storage: -40 ... +85 °C (-40 ... +185 °F)
 - Operation: -40 ... +85 °C (-40 ... +185 °F)
- Humidity: 5 ... 95 % RH (non-condensing)
- Ambient pressure: Atmospheric pressure
- Protection class: IP20
- Vibration/Shock: EN 60068-2

Unpacking/Included in Delivery

- 1 Controller
- 1 Setup Guide

You can find more information about the sensor in the operating instructions. They are online at: <https://www.micro-epsilon.com/download-file//man--induSENSOR-MSC7xx--en.pdf>

Power Supply, Sensor and Signal Output

The MSC7602 is designed for multi-channel operation. Therefore, power supply and RS485 must therefore be applied only to one controller and can then be transmitted to the adjacent controller via a DIN rail bus connector on the rear side.

The Sync signal is only available on the DIN rail bus connector and executed in series, i.e., it is not daisy-chained in the bus connector.

All of the connections for the power supply/sensors/signal output are on the controller.

Connections:

Screw terminal connection; AWG 16 up to AWG 24; up to AWG 28 with ferrule

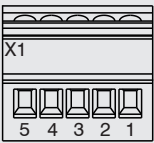
Assignment	Pin X1	Color (cable: PC7400-6/4)	
Supply voltage +24 V	1	White	
GND Supply/signal ground	2	Brown	
Analog output for channel 1	3	Yellow	
Analog output for channel 2	4	Green	
Cable shield sensor 2 (direct connection to DIN rail)	5	-	

Table for pin assignment of supply and analog output

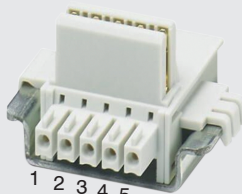
Assignment	Pin	
Supply voltage +24 V	1	
Ground 0 V	2	
RS485 A	3	
RS485 B	4	
Sync-signal	5	
ME22,5 TBUS 1,5/4P1S KMGY (Phoenix: 2201732) Suitable mating plug: MCVR 1.5/5-ST-3.81 (Phoenix: 1827156)		

Table for pin assignment of DIN rail bus connector

Installation

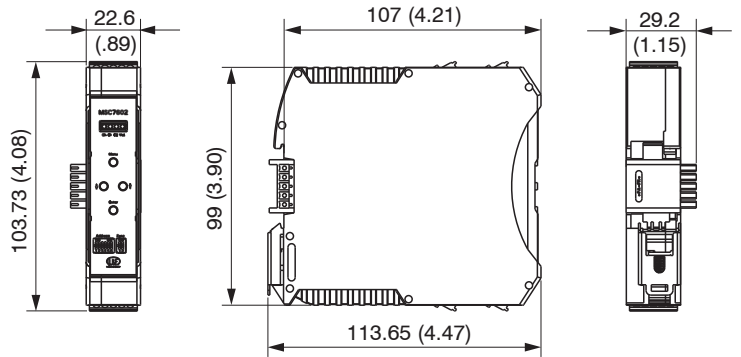
- ➡ If required, install a DIN rail bus connector, e.g., ME22,5 TBUS 1,5/4P1S KMGY (Phoenix: 2201732)¹, onto the DIN rail.
- ➡ If required, connect the mating plug, e.g., MCVR 1.5/5-ST-3.81 (Phoenix: 1827156)¹, with the bus connector.
- ➡ Position the MSC7602 controller on the DIN rail and press it down until it snaps in.



Installation of controller

Dismantling of controller

1) Also see chapter Optional Accessories in the operating instructions.



Dimensions of MSC7602 controller, dimensions in mm

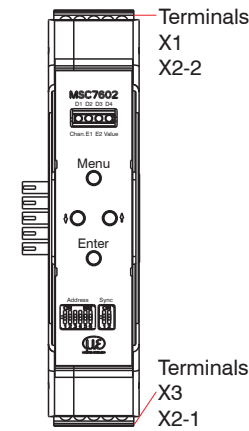
Dismantling

- ➡ For dismantling, pull the locking element on the controller forwards, e.g., using a screwdriver ^①.
- ➡ Tilt the controller in order to remove it from the DIN rail ^②.

Control and Display Elements

Button/LED	Function	Description
Menu button	Enter the menu level	-
Enter button	Confirmation	-
↑ and ↓ buttons	Parameter selection	-
LED D1 / Ch	Channel display	The LED Channel indicates the current channel. Channel 1: green, channel 2: red It flashes in corresponding color, if the channel is not parameterized.
LED D2 / E1	E1 menu level display	The E1 and E2 LEDs show the current position in the menu or the corresponding settings.
LED D3 / E2	E2 menu level display	
LED D4 / Value	Value display	The Value LED indicates the current value of the selected parameters.

Initial Operation



Terminals X1 X2-2

Terminals X3 X2-1

- ➡ Connect the sensor before starting the controller.
- ➡ Ensure that the wiring of the sensor connections, signal cable and power supply connections are correct before connecting the controller to the power supply and turning it on.
- ➡ Then switch on the power supply.
- ➡ Set the controller to its basic setting, also see chapter 5.3.

Address Assignment

Address		Switch setting						
Sensor 1	Sensor 2	S1	S2	S3	S4	S5	S6	Binary
126 ^{1 2}	125 ^{1 2}	0	0	0	0	0	0	000000
2 ³	1	1	0	0	0	0	0	000001
4	3	0	1	0	0	0	0	000010
6	5	1	1	0	0	0	0	000011
...
124	123	0	1	1	1	1	1	111110
126	125	1	1	1	1	1	1	111111

Address assignment on the induSENSOR MSC7602 controller

- 1) Factory settings
- 2) The address can be set using the `sensorTOOL`, see operating instructions, chapter A3.
- 3) We recommend using address 3 or higher, as many bus masters use address 1.

0 = OFF, 1 = ON

Requirements:

- Each address is only permitted once on the same bus.
- Address channel 1: even value; address channel 2: odd value
- Master address of Micro-Epsilon products: "1"

Synchronization

Switch setting		Operation	
S1	S2	Sensor 1	Sensor 2
0 ¹	0 ¹	Independent	Independent
0	1	Master	Slave
1	0	Slave	Independent
1	1	Slave	Slave

DIP switch on the induSENSOR MSC7602 for synchronization

- 1) Factory settings

0 = OFF, 1 = ON

The prerequisites for sync operation are described in the operating instructions, chapter 5.5.2.

Setting

The controller can be easily set using buttons, LEDs or a software (see operating instructions, Chap. A3).

Sensor model	Measuring range	Sensor type	Supply frequency	Excitation voltage
DTA-1x	±1 mm	LVDT	5 kHz	550 mV
DTA-3x	±3 mm		5 kHz	
DTA-5x	±5 mm		5 kHz	
DTA-10x	±10 mm		2 kHz	
DTA-15x	±15 mm		1 kHz	
DTA-25x	±25 mm		1 kHz	
LDR-10	10 mm	LDR	21 kHz	
LDR-25	25 mm		13 kHz	
LDR-50	50 mm		9 kHz	
LVP-3	3 mm		18 kHz	
LDR-14	14 mm		23 kHz	
LVP-25	25 mm		16 kHz	

Sensor models and sensor parameters

MICRO-EPSILON MESSTECHNIK GmbH & Co. KG
Koenigbacher Str. 15 • 94496 Ortenburg / Germany
Tel. +49 (0) 8542 / 168-0 • Fax +49 (0) 8542 / 168-90
info@micro-epsilon.com • www.micro-epsilon.com

Your local contact: www.micro-epsilon.com/contact/worldwide/



X9771377.02-A032065HDR



Assembly Instructions
induSENSOR
MSC7602



Menu Structure for the MSC7602 Controller

D1: <div>Channel</div>	D2: <div>E1</div>		D3: <div>E2</div>		D4: <div>Value</div>		Next menu
	<div>G</div>	Adjustment	<div>ENTER</div>	<div>↑</div> <div>↓</div>	<div>R</div> 2-point adjustment	<div>ENTER</div>	Go to the adjustment modes 2-point adjustment or Zero-point search.
				<div>G</div> Factory settings			
				<div>O</div> Zero-Point Search			
	<div>↑</div>						
<div>MENU</div> <div>(3 sec.)</div>	<div>R</div>	Automatic sensor re-cognition	<div>ENTER</div>		<div>G</div> Successful	<div>ENTER</div>	<div>➡</div> E1 level
				<div>R</div> Failed	<div>R</div> Failed		<div>➡</div> Sensor parameter
				<div>G</div> Manually set	<div></div> Manually set		Display only
	<div>↓</div>						
	<div>O</div>	Signal	<div>ENTER</div>	<div>↑</div> <div>↓</div>	<div>G</div> Automatic	<div>ENTER</div>	<div>➡</div> E1 level
				<div>O</div> Voltage	<div>Voltage</div> <div>↑</div> <div>↓</div> <div>O</div> 2 ... 10 V		
				<div>R</div> Current	<div>Current</div> <div>↑</div> <div>↓</div> <div>R</div> 0 ... 5 V		
	<div>↓</div>						
	<div>R</div>	Sensor parameter	<div>ENTER</div>		<div>R</div> Sensor type	<div>↑</div> <div>↓</div>	DTA (LVDT)
							LDR
				<div>↑</div> <div>↓</div>	<div>G</div> Frequency	<div>↑</div> <div>↓</div>	DTA LDR
							1 kHz 9 kHz
							2 kHz 13 kHz
							5 kHz 16 kHz
							10 kHz 21 kHz
							13 kHz 23 kHz
				<div>↑</div> <div>↓</div>	<div>O</div> Amplitude	<div>↑</div> <div>↓</div>	550 mV
							350 mV
							150 mV
							75 mV
						<div>ENTER</div>	<div>➡</div> E1 level

Legend of the Menu Structure

<div>O</div>	LED orange	<div>R</div>	LED red
<div>G</div>	LED orange flashing	<div>R</div>	LED red flashing
<div>G</div>	LED green	<div></div>	LED off
<div>G</div>	LED green flashing	SMR	Start of measuring range
		MMR	Mid of measuring range
		EMR	End of measuring range

Menu Structure for the MSC7602 Controller, Adjustment Mode: 2-point Adjustment

D1: <div>Channel</div>	D2: <div>E1</div>		D3: <div>E2</div>		D4: <div>Value</div>
<div>G</div> <div>R</div>	<div>G</div>		<div>R</div>		
	<div>➡</div>	Move the measuring object to position X ₁ , and change the output signal U ₁ with			<div>G</div>
	<div>↑</div> <div>↓</div>				Flashes orange when the measuring object is in the electrical center of the sensor.
			<div>ENTER</div>		
	<div>G</div>		<div>R</div>		
	<div>➡</div>	Move the measuring object to position X ₂ ¹ and change the output signal U ₂ with			<div>G</div>
	<div>↑</div> <div>↓</div>				Flashes orange when the measuring object is in the electrical center of the sensor.

Menu structure for the MSC7602 controller, adjustment mode: 2-point adjustment

1) Position X₂ must be > 10 % of the measuring range away from X₁.

Menu Structure for the MSC7602 Controller, Adjustment Mode: Zero-point Search

D1: <div>Channel</div>	D2: <div>E1</div>		D3: <div>E2</div>		D4: <div>Value</div>
<div>G</div> <div>R</div>	<div>G</div>		<div>O</div>		
	<div>➡</div>	Set the output signal U ₀ .			<div></div> LED off
	<div>↑</div> <div>↓</div>				
					6 VDC or 12 mA is preset.
			<div>ENTER</div>		
	<div>G</div>		<div>O</div>		
	<div>➡</div>	Move the measuring object to position X ₀ until the output has reached U ₀ .		The LED flashes and color changes depending on the output signal (green = too low, red = too high).	<div>O</div>
					Lights orange when the measuring object is in the electrical center of the sensor.
			<div>ENTER</div>		
	<div>G</div>		<div>G</div>		
	<div>➡</div>	Move the measuring object to position X ₂ ¹ and change the output signal U ₂ with		The LED color changes depending on the position of the measuring object.	<div>G</div>
	<div>↑</div> <div>↓</div>				Flashes orange when the measuring object is in the electrical center of the sensor.

Menu structure for the MSC7602 controller, adjustment mode: Zero-point search

1) Position X₂ must be > 10 % of the measuring range away from X₁.